

COMPLETE LISTING OF THE CLAIMS

1. (Currently Amended) A method for classifying an occupant including the steps of:
 - a. capturing an image of an occupant area in a vehicle;
 - b. dividing the image into a plurality of subimages of different predetermined spatial regions;
 - c. generating a spatial feature matrix of the image based upon the plurality of subimages;
 - d. analyzing the spatial feature matrix; and
 - e. classifying an occupant in the occupant area based upon said step d) into a classification, wherein the classifications include: adult and child.
2. (Original) The method of claim 1 further including the step of processing the image to account for lighting and motion before said step d).
3. (Original) The method of claim 1 further including the step of smoothing the classification of the occupant over time.
4. (Original) The method of claim 1 further including the step of determining whether to activate an active restraint based upon the classification of said step e).
5. (Original) The method of claim 1 wherein said step d) further includes the step of applying expert classifier algorithm to the spatial feature matrix.
6. (Original) The method of claim 5 wherein said step d) further includes the step of analyzing the spatial feature matrix based upon a set of training data.

7. (Original) The method of claim 6 further including the step of creating the set of training data by capturing a plurality of images of known occupant classifications of the occupant area.

8. (Original) The method of claim 5 wherein the expert classifier algorithm includes a neural network.

9. (Original) The method of claim 1 wherein said step d) is based upon system parameters including an orientation or a location from which the image is captured relative to the occupant area in said step a).

10. (Original) The method of claim 9 further including the step of:

f) altering the orientation or the location from which the image is captured and adjusting the system parameters.

11. (Original) The method of claim 10 wherein said step f) further includes the step of entering physical data representing a physical orientation and location of the occupant area.

12. (Original) The method of claim 10 wherein said step f) further includes the step of capturing a calibration image of the occupant area in a known condition and determining the system parameters based upon the calibration image.

13. (Original) The method of claim 12 wherein said step f) further includes the step of placing a calibration pattern on the occupant area before the step of capturing the calibration image, such that the calibration image includes the calibration pattern.

14. (Previously Presented) The method of claim 1 wherein the plurality of subimages partially overlap one another.

15-24. (Cancelled).

25. (Currently Amended) A method for classifying an occupant including the steps of:
- a) capturing an image of an occupant area in a vehicle;
 - b) dividing the image into a plurality of subimages of different predetermined spatial regions;
 - c) generating a plurality of low-level descriptors from each of the plurality of subimages;
 - d) analyzing the low-level descriptors; and
 - e) classifying an occupant in the occupant area based upon step d) into one of a plurality of classifications, wherein the classifications include: infant seat.
26. (Original) The method of claim 25 wherein said step d) further includes the step of analyzing the low-level descriptors based upon a set of training data.
27. (Original) The method of claim 26 further including the step of creating the set of training data by capturing a plurality of images of known occupant classifications of the occupant area.
28. (Original) The method of claim 25 wherein said steps d) and e) are performed using a neural network.
29. (Original) The method of claim 25 wherein said step d) is based upon system parameters including an orientation or a location from which the image is captured relative to the occupant area.
30. (Original) The method of claim 29 further including the step of:
- f) altering the orientation or the location from which the image is captured and adjusting the system parameters.
31. (Original) The method of claim 30 wherein said step f) further includes the step of entering physical data representing a physical orientation and location of the occupant area.

32. (New) The method of claim 1 wherein said step e) further includes the step of determining the classification of the occupant from among the classifications including: adult, child and infant seat.

33. (New) The method of claim 32 wherein said step e) further includes the step of determining the classification of the occupant from among the classifications including: adult, child, forward-facing infant seat and rearward-facing infant seat.

34. (New) A method for classifying an occupant including the steps of:

- a) capturing an image of an occupant area in a vehicle;
- b) dividing the image into a plurality of subimages of different predetermined spatial regions;
- c) generating a spatial feature matrix of the image based upon the plurality of subimages;
- d) analyzing the spatial feature matrix; and
- e) determining whether the occupant area is occupied by a person based upon said step d).

35. (New) The method of claim 34 further including the step of, if it is determined that a person is present in said step e), determining whether the person is an adult or a child based upon said step d).

36. (New) The method of claim 34 further including the step of, if it is determined that a person is present in said step e), determining whether the person is in an infant seat based upon said step d).

37. (New) The method of claim 36 further including the step of, if it is determined that the person is in an infant seat, determining whether the infant seat is forward facing or rearward facing based upon said step d).

38. (New) The method of claim 34 further including the step of, if it is determined that no person is present in said step e), determining whether an object is in the occupant area based upon said step d).